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43  
--44. (New) The nanocrystallite of claim 12, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 10% of a mean diameter of the population.--

16 44  
--45. (New) The nanocrystallite of claim 12, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 5% of a mean diameter of the population.--

17 45  
--46. (New) A nanocrystallite comprising  
a nanocrystalline core comprising MTe  
wherein M is selected from the group consisting of Cd, Zn, Mg, and Hg, and  
an overcoating of a semiconductor material on a surface of the core wherein the  
core photoluminesces at a wavelength in the range of 435 to 800 nm.--

18 46  
--47. (New) The nanocrystallite of claim 46 wherein the core comprises CdTe.--

19 47  
--48. (New) The nanocrystallite of claim 46, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 10% of a mean diameter of the population.--

20 48  
--49. (New) The nanocrystallite of claim 46, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 5% of a mean diameter of the population.--

21  
49  
--50. (New) The nanocrystallite of claim 46, wherein the overcoating comprises ZnS.--

22 50  
--51. (New) ) The nanocrystallite of claim 46, wherein the overcoating comprises ZnSe.--

23 51  
--52. (New) The nanocrystallite of claim 46, wherein the overcoating comprises CdSe.--

24<sup>52</sup>--~~53~~. (New) The nanocrystallite of claim ~~46~~<sup>17</sup><sub>45</sub>, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 20%.--

25<sup>53</sup>--~~54~~. (New) The nanocrystallite of claim ~~46~~<sup>17</sup><sub>45</sub>, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 40%.--

26<sup>54</sup>--~~55~~. (New) The nanocrystallite of claim ~~46~~<sup>17</sup><sub>45</sub>, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 60%.--

27<sup>55</sup>--~~56~~. (New) The nanocrystallite comprising  
a nanocrystalline core comprising MTe  
wherein M is selected from the group consisting of Cd, Zn, Mg, and Hg, and  
an overcoating of a semiconductor material on a surface of the core wherein the core  
photoluminesces with a full-width at half maximum (FWHM) of 70 nm or less.--

28<sup>56</sup>--~~57~~. (New) The nanocrystallite according to claim ~~56~~<sup>27</sup><sub>55</sub>, wherein the FWHM is 45 nm or less.--

29<sup>57</sup>--~~58~~. (New) The nanocrystallite according to claim ~~56~~<sup>27</sup><sub>55</sub>, wherein the FWHM is 20 nm or less.--

30<sup>58</sup>--~~59~~. (New) The nanocrystallite according to claim ~~56~~<sup>27</sup><sub>55</sub>, wherein the FWHM is 15 nm or less.--

31<sup>59</sup>--~~60~~. (New) The nanocrystallite of claim ~~56~~<sup>27</sup><sub>55</sub>, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 10% of a mean diameter of the population.--

32<sup>60</sup>--~~61~~. (New) The nanocrystallite of claim ~~56~~<sup>27</sup><sub>55</sub>, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 5% of a mean diameter of the population.--

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<sup>61</sup>  
~~33-62~~ (New) The nanocrystallite of claim <sup>27</sup>~~55~~ 56, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 20%.--

<sup>62</sup>  
~~34-63~~ (New) The nanocrystallite of claim <sup>27</sup>~~55~~ 56 wherein the core comprises CdTe.--